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Journal of the Society of Arts.

FRIDAY, AUGUST 9, 1861.

INTERNATIONAL EXHIBITION OF 1862.

The Council beg to announce that the Guarantee Deed is now lying at the Society's House for signature, and they will be much obliged if those gentlemen who have given in their names

as Guarantors, will make it convenient to call there and attach their signatures to the Document. Signatures for sums amounting in the aggregate to £425,700, have been attached to the Deed.

The following additional arrangements have been made in Foreign Countries to represent the interests of intending Exhibitors :—

Duchy of Brunswick.

The Director of the Society of Trades has been appointed Commissioner.

GUARANTEE FUND FOR THE EXHIBITION OF 1862.

The following additions have been made since the announcement in the *Journal* for July 19 :—

* * * The names marked with an asterisk are those of Members of the Society of Arts.

NAMES.	AMOUNT.	REPRESENTING THE OBJECTS OF THE SOCIETY—ARTS, MANUFACTURES, AND COMMERCE.
*H. L. Cohen, 2, Cleveland-terrace, Hyde-park, W.	£100	Arts.
*James Tulloch, F.R.S., 16, Montague-place, W.C.	100	Arts.
*John Millar, Bethnall-house, Bethnall-green, N.E.	100	Arts.

By ORDER,

P. LE NEVE FOSTER, *Secretary.***NOTICES TO INSTITUTIONS.**

The Secretaries of those Institutions whose Members intend to join (with their friends) in the Excursion to the Crystal Palace, on the 27th inst., are requested to communicate with the Secretary of the Society of Arts without delay, stating the number of persons likely to be present.

The Council have communicated with every Railway Company whose line is likely to be traversed by the Excursionists from the Institutions, and have requested that such facilities may be afforded as will allow large numbers to take a part in the proposed gathering.

The arrangements for the supply of books, which had been temporarily suspended, are now renewed on the same terms as before, namely, a discount of 27½ per cent. allowed off books, and 25 per cent. off periodicals, except where such periodicals are irregular in price, such as the Quarterlies, in which case trade price only will be charged.

Forms for ordering books may be obtained on application to the Secretary of the Society of Arts, to whom all orders should be sent.

THE BRITISH COLONIES AND THE INTERNATIONAL EXHIBITION OF 1862.

By P. L. SIMMONDS.

The colonial collection of products at the International Exhibition next year promises to be one of the most important and interesting features both to Englishmen and to foreigners. In 1851, the colonies were, as a whole, almost unrepresented. The notice given was too short; the undertaking was hurried; the project was quite new, and not thoroughly understood; and, moreover, most of the colonies were scarcely in a position to go to much expense for contributions. The East India Company, however, made a noble display, and some few of the British Colonies a respectable appearance in 1851, and also at Paris in 1855, as I shall have occasion to notice.

According to the latest official returns, the aggregate population of the Colonies and Possessions under British rule exceeds 195,000,000, of which the great bulk, 185,000,000, are distributed over British India. In these colonies a total revenue is raised of about £44,000,000, and the yearly value of the external trade, imports and exports, is upwards of £176,000,000. The cost to the mother country of the colonies, omitting India, is only about £4,000,000, whilst the value of British produce and manufactures shipped to them exceeds £46,000,000, or nearly one-third of the amount of our total exports.

It appears, from the official reports, that out of 23,575 superficial feet of horizontal net space allotted to the British Colonies in 1851, but 6,180 feet was occupied. The only colonies then specially represented were—Canada, which made a good display; a few objects indirectly sent for exhibition from Nova Scotia, New Brunswick, Newfoundland, and Bermuda.—From the West Indies was

a small collection from the Bahamas, and a few odds and ends from Antigua and Barbados. Trinidad and British Guiana were well represented. Of the African Colonies, the Cape was the only one that sent a collection—a few objects illustrating the products of St. Helena, and the West Coast of Africa, were shown by London merchants and individual exhibitors in England.

Of the Eastern Colonies the Mauritius sent but little, but a fair collection was transmitted from Ceylon.

In 1851 the Australasian Colonies were but poorly represented, although a few made some efforts to put in an appearance. The New South Wales and Tasmanian collections were creditable, and a few things were sent from South Australia and New Zealand. With the exception of a small collection from Malta, this formed the aggregate of the Colonial efforts.

At the Paris Exhibition in 1855, the few colonies that did send articles made a very satisfactory display. Canada, especially, obtained honour for its varied collections, which occupied upwards of 3,000 feet of space, contributed by about 350 exhibitors. Jamaica covered an area of about 500 feet, and British Guiana 350, whilst Barbados and the Bahamas were the only other West Indian Colonies that sent. Ceylon occupied nearly as much space as Demerara, and the Mauritius sent a small collection. The Australian Colonies on that occasion were very well represented, although one or two did not show; 251 exhibitors from New South Wales occupied 871 square feet; 118 exhibitors from Tasmania 429 feet; 36 from Victoria 289 feet, and 10 from Newfoundland 117 feet. The official returns show that the twelve British Colonies which exhibited products at Paris in 1853, filled about 500 feet more space than all the colonies which were represented in 1851.

The contributions from the Colonial possessions and many of the miscellaneous and outlying countries which have no special government, or where no commission can be formed, will be under the entire superintendence of Dr. Lindley, F.R.S., who, besides his well-known scientific attainments, brings to the work the great business knowledge and experience gained in the same department at the Exhibition of 1851.

Our Indian possessions and the Straits Settlements will come under the jurisdiction of Dr. J. Forbes Watson, the reporter on Indian products, who has devoted so much attention to a due development of the staples of India, and has lately been so closely occupied in re-arranging the valuable East India Museum at Pyfe-house, Scotland-yard.

1. AFRICA AND THE AFRICAN COLONIES.

To no part of the world has greater attention been given of late years than to Africa. In 1851 the products of his great continent were scarcely represented at all. I propose, first, to speak of our own colonies in Africa, and then pass on to notice the trade and products of other parts.

The South African territory is divided into five large provinces—the Cape Colony, British Kaffraria, the Orange Free State, the Transvaal, or South African Republic, and Natal. The Cape Colony has been a British possession since 1806. Kaffraria was declared a British dependency at the close of the last Kaffir war; it is now a separate colony, under the administration of Colonel Maclear, as Lieut.-Governor. The Orange River Free State and the Transvaal Republic are occupied by a sparse population of Dutch settlers. The British sovereignty over the Orange State has been withdrawn, to the regret of many of the settlers. Natal, the most prosperous of the young colonies springing up in South Africa, has been under British protection since 1845.

Although the Cape colonists have suffered much from time to time by Kaffir invasions, the horse sickness, and the lung disease, or pleuromania, and occasional droughts, yet the increase of live stock has been very considerable. The natural grasses, without cultivation of any kind, support from twelve to fourteen millions of sheep and goats and half a million of horned cattle. There are also a large number of horses raised, the Cape being one of the chief

sources of supply for mounting the Indian army. The exports of wool have, within the last few years enormously increased; and, considering the vast tracts of unoccupied country suitable for sheep farms, this pursuit offers an unlimited field for enterprise. It has been proved by extended experience that a flock of sheep, on a suitable farm, will, after deducting all the management, pay the capitalist thirty per cent., with an annual increase of capital besides.

The Cape Colony has been advancing in sheep-farming—the most important of all productive pursuits—faster than any other colony. In 1851 the export of wool from the Cape was under 6,000,000lbs.; last year, including Natal and the Dutch States, the production was as much as 24,000,000lbs. But agriculture is also now well attended to. Whilst large quantities of American flour were formerly imported, more than sufficient wheat is now grown to supply local wants. There is a considerable surplus exported. In 1852 the export of Cape wines only amounted to 250,256 gallons; in 1859, 786,620 gallons were imported into the United Kingdom. While the revenue of the Colony has doubled in the last ten years, the value of the colonial exports has trebled.

The following are the official steps that have already been taken in the Cape Colony for promoting the objects of the Exhibition. On the 26th November, 1860, the annexed notice was published in the *Government Gazette*:—“His Excellency the Governor is desirous that the products of the Cape of Good Hope should be properly exhibited at the ensuing International Exhibition, to be held in London in 1862, feeling convinced that great benefits will result from a knowledge of the natural resources of the colony being extensively disseminated. His Excellency has therefore appointed the undernamed gentlemen to form a Commission to deliberate upon the best means of carrying out this design, and trusts that they will meet with the support and co-operation of all classes of her Majesty's subjects in South Africa. Hon. R. Southey, Acting Colonial Secretary; Hon. W. S. Field, Acting Collector of Customs; Hon. W. Porter, Attorney-General; Sir Thomas Maclear, Astronomer Royal; L. Pappé, M.D., Colonial Botanist; Sir W. Hodges, Knt.; the Committee of the Cape Agricultural Society, ten delegates of the western districts, and some other gentlemen. The names of Messrs. Layard and Fairbridge, were subsequently added to the Commission.

In order to divide the labour, another notice in the *Gazette* states that the Governor has appointed the undermentioned gentlemen to be members of a Commission in the Eastern Province for carrying out the objects of the Great International Exhibition of 1862:—Museum Sub-Committee—Lord Bishop of Graham's Town; Dr. Atherstone; W. Edwards, Esq.; J. Standen, Esq.; H. C. Haswell, Esq.; B. J. Glanville, Esq.; — Matthews, Esq. Sub-Committee from Albany Agricultural Society—Sir Walter Currie; Geo. Wood, jun., Esq.; H. Blaine, Esq.; C. H. Caldecott, Esq.; G. C. Frames, Esq.; D. Hannay, Esq.; T. C. White, Esq.; A. C. Bisset, Esq.; J. Baines, Esq.; T. F. King, Esq.; W. R. Thompson, Esq.

A little jealousy and ill-feeling just now exists between the two divisions of the colony. The commercial progress of the eastern province has been much more rapid than that of the western, and there has been a strong agitation for separation and the establishment of an independent colony. This, however, is not likely to interfere with the due collection and display of products; indeed, a competitive rivalry is more likely to arise.

Dr. Pappé, the colonial botanist, who has already, by his scientific works, done so much towards making known the resources of the Colony, has been on a tour through the two provinces, collecting samples of the colonial woods. He also visited British Kaffraria, passing through, on his way, the well-wooded districts of the Kalbergs and the Amatotas. Dr. Pappé has already secured a large number of valuable specimens, which he has had prepared for the purposes of scientific as well as economic

exhibition. It is his intention to write a descriptive catalogue of these specimens, which will be forwarded with the collection to England. Dr. Pappe is of opinion that some of the colonial timber is remarkably suitable, on account of its durability, for railway sleepers; and ridicules the idea of looking to foreign sources for a supply of inferior and yet more costly material.

On the arrival of Dr. Pappe at Graham's Town, on the 22nd of April, a special meeting of the Commission was held for the purpose of conferring with him on matters concerning the Exhibition. A letter was read from the Colonial Secretary, dated the 25th March, requesting to be informed whether the Eastern Commission would agree to allow their contributions to be sent to Cape Town, there to be selected from before they were transmitted to England; and also expressing the desire of the Governor that all contributions should be sent together from Cape Town. It was resolved that no objection be made to send whatever specimens of produce can be collected in the Eastern Province to Cape Town for transmission to England, together with the collection of the Western Commission, or generally to act in concert with the Western Commission, but that no selection would be permitted to be made from the collection sent by the Eastern Commission. A letter was read, dated 5th April, from the Colonial Secretary to the Lord Bishop of Graham's Town, stating that if the Eastern Commission agreed to act with the Western, the extension of their Commission, as desired, would be made. Dr. Pappe suggested that the depot for the reception of the products to be transmitted to the Exhibition should be decided on as soon as possible.

At a recent meeting of the committee of the Albany Agricultural Society, it was resolved to call for offers of produce for the Exhibition, and to give £50, in two prizes of £30 and £20, for the best samples of washed wool, the quantity for either prize to be not less than 1,000 lbs. The chairman stated that Mr. Pohl's wool, which obtained the first prize at their last Agricultural show, had sold for 2s. 6d. a pound, notwithstanding that at the time it was sold prices were on the decline. The export of South African wool now reaches about 24,000,000 lbs. annually. Great complaints are, however, made by the brokers here of the dirty and burry condition and short staple of much that comes to hand. The sheep farmers are too anxious to realize, hence we find the opinion expressed among them, "That wool of eight months' growth is quite equal to that of twelve months, and that to shear twice in two years would be better for the sheep, better for the sellers, and better for the buyer."

The Albany Agricultural Society also proposes to give a prize of £5 for the best sample of cotton grown on the frontier, and £50 for the best bale to be sent to the Exhibition of 1862, to which would be added the silver medal offered by the Cotton Supply Association of Manchester.

His Excellency, the Lieut.-Governor of Natal, in a dispatch to the Secretary of the Colonies, dated May 2, announces that he had appointed committees in each county and a central committee at the seat of Government, Pietermaritzburg, for the purpose of collecting articles suited for the Exhibition, and that he has every reason to believe that a good collection of the natural products of the Colony, and of such other articles as form the exports from Natal, will be obtained. James Mann, Esq., M.D., has been appointed Hon. Secretary of the Committee at the seat of Government.

The status of Natal is very different to what it was ten years ago. The colony has increased greatly in trade and productive resources. Sugar has become an important staple; coffee has been largely cultivated; arrow-root is now an article of export; ginger has been raised; ground nuts grown; cereal crops are well attended to; oranges, pine-apples, and other tropical fruits are cultivated in perfection. It would be to the interest of the colonists to

send specimens of everything that is produced, because these would prove not only interesting to the merchant, but attractive and useful to intending emigrants to that quarter. Steam communication to the West Coast, to the Cape, and to Natal, is now so regular and well maintained, that Africa is brought within nearer relation to England, and it is now being proposed to extend the steam mail line from Port Natal to Mauritius.

At Sierra Leone, Governor Hill, in a despatch to the Duke of Newcastle, dated 16th April, states that he has issued the following notice calling the attention of the colonists to the importance of the Exhibition:—

"GOVERNMENT NOTICE.

"The promoters and proposed Trustees of the Exhibition of Works of Industry and Art of all Nations, to be holden in London in the year 1862, having notified their intention of opening the Exhibition on Thursday, the 1st of May of that year, His Excellency the Governor-in-Chief has much pleasure in calling the attention of the inhabitants of the Colony to the subject, and inviting them to become contributors to the undertaking.

"The general conditions of the Exhibition, and the terms on which exhibitors will be invited to take part in it, will be shortly published. The Exhibition in its leading features will closely resemble that of 1851, pictures, however, being added on this occasion, and such preparations as can be made, in anticipation of more detailed information, may proceed on this understanding.

"As the demand for space, however, will in all probability be very much in excess of what it will be possible to provide, so that quality and not quantity will have mainly to be looked to in deciding upon the articles to be admitted, the Trustees hope that the greatest care will be exercised in selecting good specimens of the Industry and Art of this Colony, and more especially of its natural productions.

"By His Excellency's command,

(Signed) "GEO. W. NICOLL,
Colonial Secretary.

"Secretary's Office, Sierra Leone, 14th March, 1861."

H.M. Commissioners have not yet received advices as to what steps have been taken at Gambia and the Gold Coast.

With respect to other parts of Africa, the trade of the West Coast generally is likely next year to be well represented by individual exhibitors, especially the leading African merchants of London, who have sent out instructions to make collections of products of all kinds. The African Steam Navigation Company has instructed its agents at its various depôts to attend specially to this matter. The African Aid Society, a newly established Society, of which Lord Alfred S. Churchill, M.P., is chairman, has applied for space for specimens of produce, manufactures, and implements, which it has been promised, and which it intends making, subsequently, the nucleus of an African museum. The various Missionary Societies have instructed their missionaries to aid in the collection of such objects for exhibition. The Foreign Office has instructed its consuls and consular agents to render their assistance in procuring good examples of every description of raw produce yielded by the regions with which they are in communication, with the view to their being displayed at the forthcoming International Exhibition.

Dr. Baikie, R.N., employed in the Niger Expedition, will doubtless bring his scientific knowledge to bear in sending home, as he has already done, useful products; while Dr. Livingstone, from his official position and knowledge, will also be able to aid the Exhibition.

The Free Republic of Liberia intends to make a creditable display of products, and Mr. Gerald Ralston, the Consul-General here, and Mr. J. H. Gurney, M.P., will be the London Commissioners.

One of the last Liberian papers named states:—

"We are happy to announce that the Government of Liberia will procure a suitable place in that exhibition where our products can be fairly represented.

"The government will purchase for cash, from producers, cotton, sugar, syrup and molasses, coffee, palm oil, ground-peas, and pea-nut oil, arrow-root, cassada starch, ginger, cayenne pepper, well dried in the sun, and of a reddish colour, and such other of Liberian products as may suit the purpose. These articles must be the best that can be produced here, for it must be borne in mind that we have to compete with old and great nations of established reputation. At the desire of the producers, the different products will be labelled with the name of the producers. The articles, having been purchased, will be from that time, the property of government.

"We are almost 'overjoyed' at this prospect of establishing a fair reputation for Liberia; we are so full, that we are entirely unable to express ourselves upon this important subject. Will Liberians avail themselves of this opportunity? By one great effort they can now place themselves far ahead of their present position.

"In our exultation we forgot to say that persons producing articles for this purpose, must deliver them to the government by December, as many necessary arrangements must be made before they can be shipped."

Mr. Ralston, writing on the position of this Republic, says:—

"I am happy to add that the progress of Liberia, in an industrial point of view, is as favourable as can be expected in a country where capital is the great requisite of the community. In certain districts, however, particularly on the banks of the St. Paul's river (back of Monrovia), the cultivation and manufacture of free-labour sugar is much extended and constantly increasing; and sugar-mills are gone and going out from the United States, and from England, to aid this valuable industry. In Bassa county the cultivation of free-labour coffee has succeeded in sending out the best quality of this important article of commerce. The production of palm-oil is extending all over the Republic. The collection of camwood (a most excellent dye-wood, well known in Manchester), of ivory, gold-dust, and other important exports is greatly increasing, and I may say that nothing is wanting but more skilled labourers and enterprising settlers, with moderate amounts of moneyed capital, such as my fellow countrymen, the free people of colour of the United States could conveniently, and most advantageously to themselves, furnish, to give vast extension to their exports. Finally, the production of free-labour cotton is more and more attended to. This useful fibre grows spontaneously all over the country, and the labour of collecting, cleaning, and preparing it for market is alone requisite. In short, the industrial future of Liberia is most promising, and will, I hope, attract the attention of the free coloured people of Virginia, Maryland, Pennsylvania, Ohio, etc., who, living under such unfavourable and depressing circumstances in their native land, would so much benefit themselves, and so much benefit Liberia, by going to the west coast of Africa, to build up a respectable nation of coloured people."

The extension of French colonization in Algeria, and the progress of settlement northwards from the Cape Colony, have done much to show the agricultural and pastoral capabilities of North and South Africa. The extension of legitimate commerce on the coasts has also materially assisted in the suppression of the slave trade, while the progress of discovery in the interior, by such men as Richardson, Barth, Vogel, Livingstone, Pethe- rick, Anderson, Baikie, Burton, Speke, Du Chaillu, and others, has made us better acquainted with many of the races and countries there.

The recent efforts of the Cotton Supply Association of Manchester to stimulate the production of cotton in Africa, almost every part of which is suited to the growth of the plant, have produced beneficial results. Agriculture and commerce are rapidly advancing in Egypt, while the French are making great exertions to develop the capabilities of Algeria and Senegal. The magnificent collection of indigenous African produce shown in the permanent exposition of Algeria and the other French colonies at

Paris, affords a striking evidence of the extent of the openings for commerce in that vast and fertile continent.

Only those who have carefully examined the yearly statistics have any conception of the present amount and growing extent of the British trade with Africa, to say nothing of that carried on by the Americans, French, and other nations. The value of the exports of British produce and manufactures to our own Possessions on the west coast of Africa has advanced from £263,725, in 1858, to £340,311, in 1860; and the aggregate value of the British export trade to all parts of Africa last year was as follows:

TO BRITISH POSSESSIONS.

	£
Cape Colony	1,827,093
Natal	236,933
Ascension	8,685
St. Helena	46,312
West Coast.....	340,311

TO FOREIGN COUNTRIES

Egypt	2,479,719
Tunis	3,580
Algeria.....	43,754
Morocco	171,209
West Coast	966,981
East Coast	2,812
African Ports on the Red Sea	903

£6,128,292

Of course, when we view this in relation with so large and populous a continent, rich in varieties of all kinds of valuable products, this is still but trifling, and shows the necessity of increased stimulus from Great Britain. The progress in some branches of the African trade, during the last few years, has been considerable: of palm-oil, for instance, 450,836 cwts. was the annual average of shipments to England in the ten years ending 1850; while in the ten years ending 1859 it rose to 715,280 cwts.; and in the year 1860 to 804,326 cwts. There are also considerable shipments made direct from Africa to America and France. Groundnuts, for oil, are also extensively grown: from the River Gambia alone, where the cultivation of them began in 1849, 12,000 tons of these nuts were shipped last year, chiefly to Marseilles. Sources of supply of other oleaginous products are also opening—as the shea butter from the *Bassia Parkii*; mote-nut grease, from the *Carapa Guineensis*, and from the seeds of other euphorbiaceous plants. Ivory, to the extent of about 3,000 cwts. a-year; the so-called African teak, ebony, bar and camwoods; India-rubber, gums, and resins (copal and arabic), ostrich feathers, wool, gold dust, and various other products always in demand, prove that there are abundant elements for profitable trade with the people on the coast and in the interior, and that Africa is worthy of more attention than it has hitherto received.

The Exhibition of 1862 offers a great opportunity of bringing speedily and effectually under the notice of mercantile men the little known native riches of this part of the world; its oils, its timber, its spices, its textile materials, and those other varied raw productions which European skill knows how to apply.

NOVA SCOTIA AND THE INTERNATIONAL EXHIBITION OF 1862.

The *Halifax Chronicle* says:—"Last night's *Gazette* contains the appointment of Commissioners for Nova Scotia in connection with the great International Exhibition of Works of Industry and Art, to be held in London in May, 1862. We presume that these Commissioners are intended to form a sort of central committee for the province, and that they will endeavour to form subordinate committees in the several counties, by whose assistance they may be able to excite a proper degree of interest in the great work to forward which they have

been appointed. The example of Canada and New Brunswick should stimulate them to extraordinary exertions. In the former province, preparations for the Exhibition have been in progress for six months, and the Government Commissioners are leaving nothing undone to secure such a display of the products of Canadian industry, and the natural resources of their country, as will place her in the most favourable light before the world. In New Brunswick also the people seem fully alive to the importance of the occasion. Among the means adopted in that province to forward the work, a grand Provincial Industrial Exhibition is to be held at Sussex Vale in November next, at which the best articles produced, in agricultural produce or manufactures, are to be secured for exhibition in London. It is too late now to think of anything of this kind for Nova Scotia; but if the time still available be used to advantage, much can be done without the aid of a Provincial Exhibition. There is still ample time to make arrangements for a fair representation of the products of our forests, our farms, our fisheries, and our mines. Manufactures, unfortunately, we have none to exhibit; although, perhaps, even in this branch of industry, a steam-engine or a pianoforte might be produced, to show the people of England that Bluenose is not altogether destitute of the arts of either industry or refinement. But the four great fields referred to above should not be neglected. Nova Scotia produces wheat, oats, and barley equal in weight and quality to any in the world; yet of the four branches named, agriculture is that in which she has perhaps least to exhibit. The interests of the province demand that on this occasion she be more fairly represented than in 1851. Let the samples of her products sent for exhibition be accompanied with carefully prepared printed statements, giving accurate and full information of the extent and productiveness of our arable lands and of our fishing grounds, of the extent and richness of our coal fields, our iron mines, our forests, our gold fields, of the character of our climate, of everything, in short, calculated to give the millions of people who will visit the Exhibition an idea of what kind of country Nova Scotia really is—of how well it is adapted for a home for the emigrant, and how well deserving of the notice of capitalists; and the effect produced in the minds of intelligent Englishmen may be greater, and more beneficial, than the most sanguine Nova Scotian at this moment can dream of."

SANITARY CONDITION OF THE CITY OF LONDON.

The following is the Report of Dr. LETHBY, Medical Officer of Health, presented to the Commissioners of Sewers, and dated June 22nd, 1861:—

Foremost of the statistical facts which have been brought to light during the quarter, are those which relate to the resident population of the City. At the beginning of the present century (in 1801) there were 128,833 persons living within the City boundaries. In the four succeeding decades, the number fluctuated between 121,124 and 125,065, and in 1851 it rose to 129,171. This is the largest population the City has ever contained, and perhaps it is the densest population on record; it is in the proportion of nine persons to every house, and 180 persons to every acre. At the present time, however, according to the Census which has just been taken, the number has fallen to 113,367; and this is the smallest enumeration of the present century. It shows a falling off of rather more than 12 per cent. on the Census of 1851, and 9 per cent. on that of 1841. In the three districts of the City the reduction has been from 5·8 per cent. to 18·5; in the Eastern Union, for example, it is 5·8, in the Western, 8·4, and in the Centre, or City proper, 18·5. Large, however, as these reductions are, they have not yet brought the density of the City population to that of the rest of London, for still there are 8·4 persons to a

house, and 156 to an acre; whereas, in the rest of London there are but seven persons to a house, and only 35 to an acre.

The principal cause of the decrease of the City population has been the expansion of commerce and the rapid progress of industry. Trade has outgrown its old proportions, and has become too busy for its ancient habits. Houses that were once the dwellings of the merchant, as well as the modest marts of commerce, have grown up to be the giant palaces of industry, and the neighbouring tenements of the artizan have been swept away to make room for the bustling energies of trade. In this manner about a thousand houses have been lost to the City proper since 1851, and more than twelve hundred to the whole City. But while this destruction has been going on in the habitations of the people, there has not been a reduction in the number of the population. Twenty years ago there were but 124,717 persons in the City, living in 15,727 houses. At the present time there are 113,367 persons living in 13,478 houses. So that, while the population has diminished to an extent of only 9 per cent., the houses have been demolished to the extent of 15 per cent. This is a forcing of another person into every house; and the over-crowding is most felt in those districts where the advances of commerce have not yet created a demand for public improvements. There the dwellings remain as before—at least, there is no increase in their size or accommodation—notwithstanding that the number of occupants has become 10 per cent. more. In the Eastern and Western Unions, for example, there are now from nine to ten persons in a house, and there are from 200 to 300 persons upon an acre. Nowhere else in any town of England, or city of Europe, is there so dense a population. So that, independently of the crowds which throng the City during the day, and leave it at night, there is still a resident population which is enormously over-crowded; and these must have their sanitary wants provided for. A glance at the character of the population, especially of that part of it which abides in the courts and alleys of this city, will at once discover the magnitude of those wants, and show how difficult it is for the sanitarian to master disease, and check the progress of death. No wonder that the mortality of such places is so largely above the average.

In the course of the quarter which has just expired, there were 827 births and 694 deaths in the City. Both of these numbers are below the averages for the corresponding period of the last ten years; and the reduction has been to the extent of 3 per cent. in the case of the births, and 6 per cent. in that of the deaths.

The distribution of the births have been at the annual rate of 35·7 per 1,000 of the population in the Eastern Union, 28·6 in the Western, and 23·7 in the Central—making a total of 29·3 for the whole of the City. In the rest of London, during the Spring quarter, the birth-rate is 32 per 1,000 of the inhabitants, and in all England it is 35·6. It is only in the poorer and denser districts of the City, therefore, that the birth-rate reaches to the natural standard.

As for the death-rate, it is high, and shows a remarkable contrast with that of former years. This is mainly due to the new features presented by the recent Census; for, as I have said, instead of a population of nearly 130,000, which has been the basis of former calculations, the number is but 113,367. This brings the total death-rate of the quarter to an annual proportion of 24·5 per 1,000. In the Eastern Union it was 24·9, in the Western 27·1, and in the City proper only 22·4. Undoubtedly this is a high mortality; for in the Spring quarters of the last ten years the mortality in the chief towns of England has been but 23·5 per 1,000, and that of the whole country but 22. It must not be forgotten, however, that the density of the population in the City is 157 per acre, whereas that of the chief towns of England is but 5.

With regard to the ages at death, 40 per cent. of all the deaths were among children of less than five years

of age, and 23 per cent. among old persons at 60 and upwards. The mortality of adults in the prime of life, at from 20 to 40 years of age, was a little more than 13 per cent., and at from 40 to 60 it amounted to rather more than 16 per cent. The number of deaths at from 20 to 50 is below the average and in this respect there has been a marked improvement on former years,

Atmospheric influences have had much to do with the high mortality of the quarter, for nearly one-sixth of all the deaths were caused by pneumonia and bronchitis. Phthisis also has been more than usually fatal—in the proportion of 103 to 86. The other forms of tubercular diseases, however, have not been aggravated by the coldness of the season, for tabes and scrofula have caused but 40 deaths, and hydrocephalus but 27—the average for the last ten years being 43 and 27. Of the zymotic class of diseases, measles and whooping cough have been most prevalent. The former has been fatal in 24 cases, and the latter in 45—the averages for the quarter being 14 and 27. Infantile diarrhoea has likewise been remarkably prevalent, for the number of deaths has increased from 4 to 10. The other forms of zymotic diseases have fallen below the average—continued fever, for example, has declined from 26 to 17, scarlet fever 20 to 11, small-pox from 9 to 1, and the diarrhoea of adults from 5 to 3; so

that with the exception of bronchial affections and lung diseases, together with measles and whooping-cough, severe maladies have not been very prevalent, and the state of the public health has been good. This is likewise manifested in the sickness returns for the quarter, especially in the returns of fever attended among the poor by the surgeons of the City Unions; for instead of an average of 125 cases in the quarter, there have been but 29; and it is remarkable that for the last four years there has been a rapid decline in the number of these returns. In the Spring quarter of 1858 there were 280 fever cases attended among the poor by the Union surgeons; in 1859 the number was 108, in 1860 it was 82, and in the quarter which has just expired it was but 29. This is a little less than 1 per cent. of all the sickness, whereas the average for the season is nearly $\frac{1}{4}$ per cent., and four years ago it was nearly 10 per cent. In fact, in the rest of London the proportion is about 2 per cent., and in some of the chief towns of England it is 2·1 per cent. This improvement in the returns is undoubtedly due to the operation of sanitary measures, and to the suppression of those influences which tend to foster disease among the poor.

The principal facts connected with the meteorology of the quarter, as shown in Table I., have been deduced

TABLE I.—BIRTHS, DEATHS, AND METEOROLOGY OF EACH OF THE THIRTEEN WEEKS OF THE SPRING QUARTER OF 1861.

1861	WEEKLY NUMBER OF BIRTHS AND DEATHS.								TEMPERATURE.					BAROMETRIC PRESSURE.			Degree of Humidity. Saturation = 100.	RAIN FALL.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	EAST LONDON UNION. Pop. 40,673.				WEST LONDON UNION. Pop. 27,144.				CITY OF LONDON UNION. Pop. 45,550.		ENTIRE CITY. Pop. 113,367.		Highest.	Lowest.	Mean.	Mean of 43 Years.		Greatest Daily Range.	Highest.	Lowest.	Mean.	Total in Week.	Number of Wet Days.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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The Meteorology of the Quarter is from observations made at Guildhall, under the superintendence of the Engineer, Mr. Haywood; and the Mean Temperature of 43 years is from the weekly returns of Mr. Glaisher, at the Royal Observatory, Greenwich.

* The thermometers being under repair, observations were not taken.

from observations at Guildhall, under the superintendence of Mr. Haywood. The mean temperature of the season has been about one degree below the average of former years ($51·4^{\circ}$), and the thermometer has ranged from 82° to 36° . The daily range, however, has sometimes been as high as 24 degrees. This, conjoined with the humidity of the atmosphere, which has averaged 85 per cent. of saturation, has been the cause of the large increase of lung diseases.

In the Spring quarters of 1858 and 1859, when the river was so offensive, the average humidity of the air was only 68 and 69, and the mean temperature was $57·6^{\circ}$ and $59·8^{\circ}$. During those quarters the warmth of the river and the evaporation from its surface were considerable; indeed, in the month of June of 1858 the temperature of the water was $72·4^{\circ}$, and in the corresponding month of 1859 it was $67·2^{\circ}$. In the succeeding months it rapidly rose to the temperature of 75° , and then the putrefaction of the water was at its highest; but during the quarter which has just expired, as well as that of 1860, the temperature of the river has not exceeded 62° , and there have

been but slight signs of putrefaction. The conditions, therefore, which seem to be necessary for a high state of decomposition in the river are, a continued absence of rain, a hot spring, and a dry condition of the atmosphere. The temperature of the water must be over 60° , the rainfall less than two inches in the month, and the humidity of the air below 80 . With these conditions there is not only a diminished supply of fresh water from the upper tributaries of the river, but the volume of the stream is still further diminished by rapid evaporation from its surface. Under these circumstances, the daily supply of sewage becomes concentrated, the downflow of the current arrested, and oceanic water rises in the bed of the river to maintain its tidal level. Then it is that the mixture of sewage and sea-water putrefies and becomes a nuisance. This state of things may be predicated not only by the temperature and dryness of the air, but also by the chemical composition of the water; for when the proportion of saline matter, at high tide at London-bridge amounts to more than 60 grains per gallon, there is imminent danger of the river becoming offensive. This is the result of almost weekly observations

made over a period of four years; and, as those observations are likely to be of use in future inquiries into the state of the river, I have classified them in Tables II., III., IV., and V. As far as I know, there have not been any similar consecutive examinations made, and therefore they may be of service when the question arises as to the influence of the new system of drainage on the state of the river. Last year, and up to the present month of this year, the river has been in a normal condition; for its composition has not been very different from that recorded in the early analyses of Dr. Lambe and Dr. Bostock. In the course of the whole year, the proportion of the saline matter dissolved in the river water at high tide at London-bridge has amounted to only 28·9 grains per gallon, and the organic matter to 3·3 grains. The range has been from 19·6 to 57·3, and the organic matter from 2·6 to 5·5. The chief constituents of the saline matter have been as follows:—Carbonate of lime, 12 grains; sulphate of lime, 4·5 grains; common salt, 10 grains; alkaline nitrates, about 2 grains; and ammonia in combination, 1·3 grains. The quantity of suspended matter in the water has averaged only 6·4 grains to the gallon. At times it has risen to from 12 to 15 grains, but

this has happened during high winds, as at the time of the equinoxes, when the surface of the water has been ruffled, and the mud upon the shore disturbed. The principal constituent of the suspended matter is ferruginous clay, and with this there is combined about one-fifth of its weight of organic impurity. It is remarkable that the river water near the shore is always a little less impure than that at mid-stream. This arises from the influx of fresh water, and perhaps also from the purifying influence of the atmosphere on the thinner stratum of liquid, as well as from the circumstance that the main current of the rising tide is in the middle of the stream.

In the course of the quarter I have examined the water supplied to the City by the New River Company, and I have also analyzed the water furnished by twenty-two of the City pumps. The first-mentioned supply has not been objectionable; for the quantity of saline matter dissolved in the water has amounted to only 17·4 grains per gallon, and the organic matter to less than 2 grains (1·9). The chief constituents have been as follows:—carbonate of lime, 12·6 grains per gallon; sulphate of lime, 1·9; alkaline sulphate, 0·2; alkaline chloride, 1·2; alkaline

TABLE II.—MEAN COMPOSITION OF THAMES WATER AT HIGH TIDE AT LONDON BRIDGE, AND AT MID-STREAM DURING EACH OF THE MONTHS OF 1860.

	JAN.	FEB.	MAR.	APRIL.	MAY.	JUNE.	JULY.	AUG.	SEPT.	OCT.	NOV.	DEC.	Aver. of year.
Appearance on standing ...	Clear.	Clear.	Clear.	Slightly Turbid.	Slightly Turbid.	Slightly Turbid.	Slightly Turbid.	Slightly Turbid.	Slightly Turbid.	Clear.	Clear.	Clear.	Clear.
Odour of the Water	None.	None.	None.	Faint.	Faint.	Faint.	Faint.	None.	None.	None.	None.	None.	None.
Colour of Deposit	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.
Dissolved Constituents...	27·1	24·4	25·0	25·7	32·0	23·8	34·9	53·5	62·8	29·1	26·3	21·9	32·2
Organic	3·0	2·6	2·3	2·8	3·1	4·2	2·8	4·1	5·5	3·6	3·2	2·8	3·3
Mineral	24·1	21·8	22·7	22·9	28·9	19·6	32·1	49·4	57·3	25·5	23·1	19·1	28·9
Suspended Matter	7·9	6·7	15·2	3·2	6·2	6·9	1·8	3·7	4·8	4·0	12·0	4·1	6·4
Organic	2·2	2·0	1·6	0·6	1·3	2·1	0·4	1·0	1·1	1·1	2·8	1·1	1·4
Mineral	6·7	4·7	13·6	2·6	4·9	4·8	1·4	2·7	3·7	2·9	9·2	3·0	5·0
Total per Gallon (grains)...	35·0	31·1	40·1	28·9	38·2	30·7	36·7	57·2	67·6	33·1	38·3	26·0	38·6
Ammonia per gallon	1·0	1·1	1·3	0·9	2·7	1·0	1·8	1·3	1·7	0·9	0·6	0·9	1·3
Combined Sulphuric Acid ..	2·3	2·5	2·9	2·4	2·6	2·2	2·7	3·0	4·4	2·1	2·3	2·0	2·6
Alkaline Chlorides.....	3·7	3·8	3·7	3·8	7·6	2·7	13·3	28·5	38·1	9·0	4·7	2·7	10·1
Mean Temperature of River	42·2	38·5	42·5	46·4	55·4	57·9	62·6	61·0	58·4	51·7	46·6	41·4	50·2
Highest Temperature (deg.)	48·0	40·5	48·0	48·5	62·0	60·0	64·5	62·5	61·0	55·5	52·0	45·0	64·5
Total Rain-fall (inches) ...	1·6	1·0	1·3	1·1	3·7	4·6	2·7	3·7	2·7	1·1	2·2	1·3	27·0
Number of Wet Days	21·0	13·0	18·0	13·0	14·0	17·0	14·0	26·0	17·6	10·0	12·0	14·0	189·0

TABLE III.—MEAN COMPOSITION OF THAMES WATER AT HIGH TIDE AT LONDON BRIDGE, AND AT 6 FEET FROM THE SHORE ON THE CITY SIDE, DURING EACH MONTH OF 1860.

	JAN.	FEB.	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPT.	OCT.	NOV.	DEC.	Average of Year.
Appearance on standing	Slightly turbid.	Slightly turbid.	Clear.	Slightly turbid.	Slightly turbid.	Slightly turbid.	Slightly turbid.	Slightly turbid.	Slightly turbid.	Slightly turbid.	Clear.	Clear.	Slightly turbid.
Odour of the Water ...	Faint.	Faint.	None.	Faint.	Faint.	None.	Slight.	Faint.	None.	None.	None.	None.	Faint.
Colour of the Deposit...	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.
Dissolved Consti. } Turns	26·2	22·8	24·3	26·2	27·1	24·4	30·8	55·8	54·3	26·5	25·2	22·6	30·7
Organic	3·2	2·0	2·1	2·9	2·6	3·4	2·7	4·0	5·1	4·4	2·8	2·9	3·1
Mineral	23·0	20·8	22·2	23·3	24·5	21·0	28·1	51·8	49·2	22·1	22·4	19·7	27·6
Suspended Matter	9·0	5·4	7·7	3·3	5·9	5·9	2·2	3·1	7·2	9·4	9·2	4·8	6·1
Organic	1·7	1·1	1·5	0·8	1·3	1·9	0·5	0·8	1·6	3·3	1·9	1·0	1·4
Mineral	7·3	4·3	6·2	2·5	4·6	4·0	1·7	2·3	5·6	6·1	7·3	3·8	4·7
Total per gallon (grains)	35·2	28·2	32·0	29·5	33·0	30·3	33·0	55·9	61·5	35·9	34·4	27·4	36·8
Ammonia per gall. (gr.)	1·3	1·4	1·3	1·0	2·4	0·9	1·0	1·3	1·5	0·8	0·8	0·8	1·2
Combined Sulphuric } Acid (grains)	2·1	2·4	2·7	3·1	2·5	2·1	2·4	3·3	3·9	2·6	2·2	2·0	2·5
Alkaline Chlorides (gr.)	2·9	3·1	3·3	2·7	7·6	2·7	9·3	27·9	33·2	5·7	3·9	2·2	9·0
Mean Temperature of } River	42·2	38·5	42·5	46·4	55·4	57·9	62·6	61·0	58·4	51·7	46·6	41·4	50·2
Highest Temperature } of River	48·0	40·5	48·0	48·5	62·0	60·0	64·5	62·5	61·0	55·5	52·0	45·0	64·5
Total Rain-fall (inches)	1·6	1·0	1·3	1·1	3·7	4·6	2·7	3·7	2·7	1·1	2·2	1·3	27·0
Number of Wet Days...	21·0	13·0	18·0	13·0	14·0	17·0	14·0	26·0	17·0	10·0	12·0	14·0	189·0

nitrate, 1.0; silica and alumina, 0.5; and organic matter with traces of ammonia, 1.9. These results do not differ very materially from those obtained by Dr. Dundas Thomson, and reported in the weekly returns of the Registrar General; and they show that the water is of good quality and is well-suited for domestic purposes. Another advantageous property of the water is, that it is entirely without action on lead, and may therefore be stored in lead vessels, and distributed by lead pipes, without danger to the public health.

The quality of the water supplied by the City pumps is very different from that of the New River, for instead of an average of only 19 grains of solid matter per gallon, the water contains from 20 to 127 grains. Taking the pumps in the order of their foulness, they stand as follows:—Bishopsgate-street Without, 127.3 grains per gallon; Aldgate pump, 109.5; Cock and Hoop-yard, Houndsditch, 89.2; Bishopsgate-street Within, 89; Bride-lane, 84.7; Bow-church-yard, 84.5; Fenchurch-street, 83.1; Little Britain, 83; Basinghall-street, 81.6; Chequer-yard, Dowgate-hill, 81.1; Bell-yard, Gracechurch-street, 80; Idol-lane, 78.5; Ironmonger-lane, 76.2; Bartholomew-lane, 75.3; Cornhill, 74.8; Bowling-square, White Lion-street, 71; Half-moon-passage, 70.5; Great St. Helen's, 53.3;

TABLE IV.—MEAN COMPOSITION OF THE THAMES WATER AT HIGH TIDE AT LONDON BRIDGE DURING EACH QUARTER OF THE YEAR 1860.

	1st QUARTER. January to April.		2ND QUARTER. April to July.		3RD QUARTER. July to October.		4TH QUARTER. Oct. to Dec.		WHOLE YEAR.	
	Mid-stream.	Near Shore.	Mid-stream.	Near Shore.	Mid-stream.	Near Shore.	Mid-stream.	Near Shore.	Mid stream.	Near Shore.
Appearance on standing	Clear.	Slightly turbid.	Slightly turbid.	Slightly turbid.	Slightly turbid.	Slightly turbid.	Clear.	Clear.	Clear.	Slightly turbid.
Odour of the Water.....	None.	Faint.	Faint.	Faint.	Very faint.	Very faint.	None.	None.	None.	Faint.
Colour of the Deposit	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.	Brown.
DISSOLVED CONSTITUENTS	25.4	24.4	28.5	26.1	50.4	47.0	26.7	25.0	32.2	30.7
Organic	2.6	2.4	3.2	2.9	4.1	3.9	3.2	2.9	3.3	3.1
Mineral	22.8	22.0	25.3	23.2	46.3	43.1	23.5	22.1	28.9	27.6
SUSPENDED MATTER.....	11.3	7.5	4.9	5.1	3.4	4.2	6.2	8.0	6.4	6.1
Organic	1.8	1.4	1.1	1.3	0.8	1.0	1.6	1.8	1.4	1.4
Mineral	9.5	6.1	3.8	3.8	2.6	3.2	4.6	6.2	5.0	4.7
Total per gallon (grains).....	36.7	31.9	33.4	31.2	53.8	51.2	32.9	33.0	38.6	36.8
Ammonia per gallon (grains) ...	1.2	1.3	1.7	1.6	1.6	1.2	0.8	0.8	1.3	1.2
Combined Sulphuric Acid (gr.)...	2.7	2.5	2.4	2.5	3.4	3.2	2.1	1.9	2.6	2.5
Alkaline Chlorides (grains)	3.7	3.2	5.2	4.8	26.6	23.1	5.6	4.2	10.1	9.0
Mean Temperature of River	40.4		53.2		60.7		46.6		50.2	
Highest	48.0		62.0		64.5		55.5		64.5	
Total Rain-fall (inches)	3.9		9.4		9.1		4.6		27.0	
Number of Wet Days	52.0		44.0		57.0		36.0		189.0	

TABLE V.—MEAN COMPOSITION OF THAMES WATER AT HIGH TIDES AT LONDON BRIDGE, DURING THE SPRING AND SUMMER MONTHS OF 1858, 1859, 1860, AND 1861.

PROPERTIES OF THE WATER AND CONSTITUENTS PER IMPL. GALLON (GRAINS).	MAY.			JUNE.				JULY.			AUGUST.		SEPTEMBER.	
	1859.	1860.	1861.	1858.	1859.	1860.	1861.	1858.	1859.	1860.	1859.	1860.	1859.	1860.
Appearance after standing	Turbid	Slightly turbid.	Clear.	Turbid.	Turbid.	Slightly turbid.	Clear.	Turbid	Turbid.	Slightly turbid.	Turbid	Slightly turbid.	Turbid	Slightly turbid.
Odour of the Water	Bad.	Faint.	None.	Very bd.	Very bd.	Faint.	None.	Bad.	Very bd.	Faint.	Bad.	None.	Bad.	None.
Colour of the Deposit	Black.	Brown.	Brown.	Black.	Black.	Brown.	Brown.	Black.	Black.	Brown.	Black.	Brown.	Black.	Brown.
DISSOLVED CONSTITUENTS	94.0	32.0	31.3	140.0	74.6	23.8	42.6	157.8	192.5	34.9	302.9	53.5	410.1	62.8
Organic	6.9	3.1	3.5	12.8	7.2	4.2	4.3	15.8	16.1	2.8	20.0	4.1	23.3	5.5
Mineral	87.1	28.9	27.8	127.2	67.4	19.6	38.3	142.0	176.4	32.1	282.9	49.4	386.8	57.3
SUSPENDED MATTER	9.5	6.2	4.2	7.2	13.7	6.9	5.2	16.7	8.8	1.8	8.0	3.7	6.5	4.8
Organic	1.7	1.3	1.1	1.6	1.6	2.1	1.2	3.3	2.1	0.4	2.3	1.0	1.6	1.1
Mineral	7.8	4.9	3.1	5.5	12.6	4.8	4.0	13.4	6.7	1.4	5.7	2.7	4.9	3.7
Total per gallon (grains)...	103.5	38.2	35.5	147.2	88.3	30.7	47.8	174.5	201.3	36.7	310.9	57.2	416.6	67.6
Ammonia per gallon (grs.)	1.2	2.7	1.1	1.4	1.0	1.0	0.8	0.7	1.3	1.8	1.3	1.3	1.3	1.7
Comb. Sulph. Acid per gal. (grs.)	7.1	2.6	2.5	8.6	5.7	2.2	3.0	9.8	14.1	2.7	20.6	3.0	27.3	4.5
Alkaline Chlorides ..	65.6	7.6	9.8	107.5	52.6	2.7	19.4	121.3	174.6	13.3	225.4	28.5	328.9	38.1
Mean Temperature of River	54.0	55.4	54.2	66.8	65.0	57.9	61.3	65.3	71.3	62.6	68.4	61.0	61.8	58.4
Highest ..	61.7	62.0	60.8	72.4	67.2	60.0	67.0	70.4	75.4	64.5	71.9	62.5	66.7	61.0
Total Rain-fall (inches)	2.0	3.7	1.8	1.2	1.9	4.6	1.9	2.4	2.4	2.7	0.9	3.7	2.2	2.7
Number of Wet Days	9.0	14.0	8.0	5.0	7.0	17.0	15.0	12.0	7.0	14.0	11.0	26.0	17.0	17.0

Gutter-lane, 45·7; Honey-lane Market, 44·2; Guildhall-buildings, 28; and Glovers-hall-court, 19·8. The quantity of organic matter in them ranges from 1·5 grains per gallon to 8·8; the common salt from 2·7 to 25; the sulphate of lime from 2 to 29; the alkaline nitrates from 2·1 to 24·6, and the combined ammonia from 0·5 to 2 grains per gallon. These results show that the City pumps are not only charged with decaying organic matter, but also with the saline products of its oxydation: the ammonia, for instance, is a sign of present putrefaction, and the alkaline nitrates of a past; besides which, the existence of so large a quantity of common salt, is suggestive of the filthiest impurities, as, for example, the fluid matters discharged from the human body, and the percolations from cesspools and sewers. Most of the waters are bright and sparkling, and they have a cool and agreeable taste. They are, therefore, much sought after for drinking purposes; but the coolness of the beverage, and the briskness of its appearance, are dangerous fascinations, for they are both derived from organic decay. Dead and decomposing matters have accumulated in the soil, and have been partially changed by its wonderful power of oxydation, and thus converted into carbonic acid and nitre. These have given to the water the agreeable qualities which are so deceptive. In reality the water from the City pumps is far worse than that from the muddy river, from which it is in great part derived; indeed, it may, at any moment, become charged with the active agents of disease; for no one can say when the salutary influence of the soil may fail by being worn out or overtaxed, and then the putrid organic compounds will pass into the wells unchanged. Many of the pumps are in close proximity to the fat graveyards of the City, and it is more than probable that all of them derive a portion of their water from these sources, for they are the principal gathering grounds for the surface springs; in fact, they are the only open spaces through which the rain can percolate to reach the shallow wells. Hereafter, when I have completed the inquiry into all the City pumps, I shall discuss this matter more fully; now, however, I merely direct attention to the general foulness of the water, and to the danger which may arise from the use of it. In Table VI. I have shown the compositions of those wells which have already been examined.

With regard to the general sanitary work for the quarter, the inspectors have furnished me with returns of the inspection of 1,514 houses, and of 798 visits to the common lodging-houses of the City. These have resulted in the issuing of 715 orders for sanitary improvement.

The markets and slaughter-houses have also been duly inspected, and the officers have seized 26,013 lbs., or nearly 26 tons, of meat, and 690 head of game and poultry, as unfit for human food. It consisted of 154 sheep, 15 calves, 21 pigs, 190 quarters of beef, 209 joints of meat, 224 pigeons, 210 fowls, 58 wild fowls, 56 ducks, 36 rabbits, 23 hares and leverets, 20 geese, 59 ruffs, and 4 plovers. All the game and poultry was putrid; but of the meat 15,352 lbs. were diseased, 4,120 lbs. were putrid, and 6,541 lbs. were from animals that had died from natural causes. Most of the meat was seized in Newgate Market by Mr. Fisher and Mr. Newman, and the game and poultry in Leadenhall by Mr. Davidson. It is but right to state, that the salesmen have given great assistance to the officers in the execution of this part of their duties, by informing them of the arrival of the meat at the market, and by giving up the names and addresses of the senders. In this way we have been able to institute proceedings against the most flagrant offenders; and during the quarter, three persons have been convicted at the Old Bailey of the offence of sending diseased meat to the City markets. In two cases the punishment was imprisonment, and in the third a penalty of £20. These proceedings have had the effect of checking the supply of bad meat to the markets, for the total amount seized during the quarter is not half so much as that of the preceding quarter; and

during the last month the quantity has fallen off very considerably.

Arrangements have been entered into with Mr. Ford, of Belle Isle, for the destruction of the meat thus seized; and to ensure its not being used as food, a chemical treatment is about to be adopted before the meat leaves the custody of the Inspectors.

The last point to which I have to refer, is the working of the Act for preventing the sale of adulterated food. Only six applications have been made to me during the quarter for the analysis of articles suspected to be adulterated; two of these were for beer, one for bread, one for milk, and one for cooked ham. Both of the samples of beer were of inferior quality, and one was adulterated with a sweet material, like liquorice; the bread also was of inferior flour, but the other things were sound.

TABLE VI.—TABLE OF THE MEAN COMPOSITION OF THE NEW RIVER WATER, AS SUPPLIED TO THE CITY, DURING THE SPRING QUARTER OF 1861; OF THE THAMES AT HIGH TIDE; AND OF THE WATER FROM SOME OF THE CITY PUMPS.

SOURCES OF THE WATER.	CONSTITUENTS PER IMPERIAL GALLON:							
	Carbonate of Lime and Magnesia.	Sulphate of Lime.	Alkaline Sulphate.	Alkaline Chloride.	Alkaline Nitrate.	Silica, Alumina, &c.	Organic Matter.	Total.
	grains	grains	grains	grains	grains	grains	grains	grains
New River Company	12·6	1·9	0·2	1·2	1·0	0·5	1·9	19·3
Thames, high tide at London bridge	11·7	4·3	0·6	11·1	2·0	0·4	3·7	33·8
Pump in Bishopsgate-st. Without	34·5	27·4	7·9	24·6	24·6	1·9	6·4	127·3
Pump in Aldgate	26·2	25·8	...	25·0	24·3	1·1	7·1	109·5
Pump in Cock and Hoop-yard, Houndsditch	26·6	20·0	...	14·7	20·0	1·0	6·9	89·2
Pump in Bishopsgate-st. Within	2·47	17·0	...	17·5	20·2	1·3	5·3	89·0
Pump in Bride-lane	11·5	21·5	...	22·5	19·5	0·9	8·8	84·7
Pump in Bow Churchyard	29·6	15·1	4·2	21·2	7·6	0·9	5·9	84·5
Pump in Fenchurch-street	21·0	18·3	...	14·2	22·4	0·6	6·6	83·1
Pump in Little Britain	27·9	10·2	15·2	13·8	5·8	1·9	8·2	83·0
Pump in Basinghall-street	23·4	29·0	3·0	12·6	7·8	0·9	4·9	81·6
Pump in Chequer-yard, Dowgate-hill	15·9	18·9	...	12·4	24·6	1·3	8·0	81·1
Pump in Bell-yard, Gracechurch-street	19·3	12·8	...	19·1	19·6	1·0	8·2	80·0
Pump in Idol-lane	16·8	16·6	...	16·3	22·4	1·8	4·6	78·5
Pump in Ironmonger-lane	19·8	16·3	5·2	10·6	7·0	1·6	5·7	78·2
Pump in Bartholomew-lane	23·3	14·3	0·4	16·7	15·1	0·9	4·6	75·3
Pump in Cornhill	25·0	15·7	1·1	14·0	12·9	1·6	4·5	74·8
Pump in Bowling-square, White Lion-street	18·0	25·2	5·0	8·2	7·8	1·1	5·7	71·0
Pump in Half-Moon-passage	18·0	14·5	...	18·7	15·7	0·9	2·7	70·5
Pump in Great St. Helen's	15·8	9·5	0·7	8·1	14·0	6·8	4·4	53·5
Pump in Gutter-lane	15·5	9·0	1·6	5·7	7·9	0·9	5·1	45·7
Pump in Honey-lane market	15·1	6·1	3·7	11·4	4·4	1·4	2·1	44·2
Pump in Guildhall-buildings	13·4	1·9	3·0	5·3	2·1	0·3	2·0	28·0
Pump in Glovers-hall-court	10·9	2·0	..	2·7	2·2	0·5	1·5	19·8

In every case the water from the City pumps was clear, and of a slight greenish tinge. It was exceedingly hard, and was without action on lead.

Home Correspondence.

EXAMINATION PRIZE FUND.

SIR,—As the Programme of the Examinations of the Society of Arts for 1862 is on the eve of publication, I am desirous to call attention to the Prize Fund.

The prizes offered and received during the last seven years have had an excellent effect in encouraging young men and women to study and to undergo examination; and I know of few, if any, means by which education can be so well promoted by a small contribution as through the medium of our Prize Fund.

His Royal Highness, the President of our Society, having been pleased this year to announce his intention of giving annually a special prize of 25 guineas to the candidate, male or female, who (obtaining a certificate of the first class in the current year) shall have obtained in that year and in the three years immediately preceding it, the greatest number of such certificates, a new and powerful inducement to perseverance year after year in study is held out, and there can be no doubt that this Royal Prize will be ardently desired and keenly contested. It will be the "Blue Ribbon" of the examinations.

Besides the two prizes of £5 and £3, which are offered in each of our twenty-nine subjects of examination, additional prizes are this year offered in certain of those subjects which appear to the donors to need a little extra stimulus. These extra prizes, as far as is known at present, are in "Practical Mechanics" (the Rev. Canon Prower,) "Animal Physiology in relation to Health" (Mr. Harry Chester,) "Botany" (Dr. Lindley,) "Agriculture" (Mr. J. C. Morton,) "Mining and Metallurgy" (Sir Thomas Phillips,) "Political and Social Economy" and "Domestic Economy" (the Dean of Hereford,) "English History" and "English Literature" (Mr. Wentworth Dilke).

There are a few other subjects, such as "Navigation and Nautical Astronomy" and "Chemistry," in which extra prizes, amounting to £5, might, with great advantage, be placed at the Council's disposal; and our General Prize fund is much in want of replenishment.

I am, &c., HARRY CHESTER.
Purley Hall, near Reading, Aug. 6, 1861.

CHARCOAL AIR-FILTERS.

SIR,—I observe that Mr. Jasper W. Rogers, the patentee of the peat charcoal, in your *Journal* of the 2nd August, continues to accuse me of appropriating certain of his alleged discoveries, relating to the employment of charcoal for sanitary purposes, and especially the invention of the charcoal air-filter. Mr. Rogers carefully avoids answering my challenge to bring forward any printed statements, dated previously to 1854, announcing the fact that charcoal is an oxidizer; neither has he produced a published description of his air-filter of a similar date, but continues to refer to his experiment at Windsor, which I still maintain was not an air-filter at all.

As I have already mentioned, my attention was first directed, toward the close of 1853, to the deodorising and disinfecting properties of charcoal; and I was not long in discovering that the views which had been previously entertained were exceedingly erroneous; for instead of acting as an antiseptic, and thereby retarding the decay of putrifying substances with which it was in contact, its action was the very reverse of this. Charcoal, therefore, from the considerable amount of condensed oxygen contained within its pores, amounting to between nine and ten volumes, not only absorbs, but rapidly oxidizes the effluvia and miasmata emitted by decaying substances, and resolves them into the simplest combinations they are capable of forming—their carbon being converted into carbonic acid and their hydrogen into water.

The first application which I made of the charcoal air-filter (which consisted of a layer of charcoal of the size of

peas, enclosed between two sheets of wire gauze,) was to the construction of respirators, for protecting the wearer against contagious diseases, the miasmata being removed from the air by filtration through the charcoal.* These respirators were first publicly exhibited and described by me, and the oxidizing power of charcoal announced on the 22nd February, 1854, before the Society of Arts, as may be seen by reference to the *Journal*, Vol. II., p. 245. These respirators were manufactured for me by Mr. Ferguson, of Giltspur-street, instrument maker to St. Bartholomew's Hospital. A somewhat improved form of the respirator was soon after manufactured by Mr. W. B. Roof, of 7, Willow-walk, Kentish-town, who still continues to make them, and by whom some thousands, I believe, have been sold. Similar respirators were likewise manufactured by Messrs. Darby and Gosden, 140, Leadenhall-street; and by Mr. Alfred Allechin, pharmaceutical chemist, Barnsbury-road, Islington.

In a letter to the Society of Arts, of the 9th of June, 1854, I proposed to employ charcoal ventilators, or air-filters, consisting of a layer of charcoal, in fragments from the size of a pea to that of a large bean, to water-closets and houses, to ships, and to sewers. Within two or three months after that date air-filters, or charcoal ventilators, each of them several feet in diameter, were fitted up by Mr. Roof, both at the Mansion-house and Guildhall, where I believe they still continue in operation.

On the 22nd November, 1854, I published a letter in the *Times*, in which these and many additional details were enumerated. This letter was subsequently published as a pamphlet, and extensively distributed, and it was afterwards copied entire into that very popular work, "Enquire Within Upon Everything." (Houlston and Wright, Paternoster-row.)

On Friday evening, March 2nd, 1855, I delivered a lecture "On the Economical Application of Charcoal to Sanitary Purposes," at the Royal Institution, Albemarle-street. This lecture, which contained the preceding and many additional details, was subsequently published, first by Higgin, and then by Churchill, and went through three editions.

In the course of the summer of 1855, in conjunction with Dr. Forbes Watson, now Examiner of Products to the Council of India, I fitted up two rooms at our joint expense at 73, Great Russell-street, Bloomsbury-square, where every variety of charcoal respirator, and a series of charcoal air filters, combined with the blowing apparatus intended to ventilate hospitals, barracks, and other large buildings, in tropical climates and unhealthy situations, were exhibited during a number of weeks to many hundred individuals. These respirators and air-filters were subsequently transferred to the Polytechnic Institution, where they were continuously exhibited for three or four years. I was likewise in the habit of exhibiting a similar set of respirators and air-filters, and explaining their operation before a numerous class of medical students, in the course of my lectures at St. Bartholomew's Hospital, during a similar period.

Soon after the publication of the lecture delivered at the Royal Institution, Mr. Robert Rawlinson, C.E., was induced to apply the charcoal filter in the beginning of the year 1856 to the air shafts of sewers. During the last five years Mr. Rawlinson has applied these filters to the ventilation of sewers on a large scale at West Ham, near London, at Swansea, Workop, Buxton, and other places, I believe to the extent of 500 filters in all.

In 1858, Dr. Letheby, Health Officer of the City of London, after a minute and rigorous examination of the methods proposed for the disinfection of the sewers of London, recommended that charcoal air-filters should be employed, and during the last eighteen months Mr. Haywood, the well-known engineer to the City Commissioners of Sewers, has fitted up the whole of the Shoreditch district, comprising 59 acres, with 103 charcoal ventilators.

* These respirators were, in fact, air-filters applied to the mouth.

All the charcoal air-filters which have hitherto been applied to sewers contain only wood charcoal, in pieces of from the size of a nut to that of a walnut, and even larger, and amount to about 600, their number being constantly on the increase. Both Dr. Letheby, Mr. Rawlinson, and Mr. Haywood declare that they have derived their information concerning charcoal filters solely from my publications.

Such, then, is a statement of my case, and I leave it to the public to determine whether the claims which I have advanced with regard to the discovery of the oxidating power of charcoal, and the invention of the charcoal air-filters, are well or ill founded. At any rate, I think it must be admitted that the thing, so far as I am concerned, has not been done in a corner, and fortunately the numerous individuals who have assisted me with their co-operation are well known and producible.

In conclusion, perhaps, I may be allowed to quote an observation of Baron Liebig, which I heard from him in the course of conversation many years ago, namely, that almost every important discovery or invention passes through four stages in the course of its development. First stage: The invention or discovery is made by somebody. Second stage: It is generally pooh-poohed, but gradually adopted by a few discerning individuals. Third stage: It comes to be pretty generally adopted and its merits appreciated. Fourth stage: A violent controversy arises as to who is the author of the discovery or invention. I think it is now pretty apparent that the charcoal air-filter has reached the fourth stage of its development, and that its friends and patrons may now shortly expect to see it almost universally adopted.

I am, &c.,

JOHN STENHOUSE.

SIR,—Pray allow me to note the following typographical errors which appear in my letter published in the last *Journal*.

The fourth paragraph, as intended, should have been, "That the vitiated air passed through the wall (which Dr. Stenhouse says would have effectually prevented it) and blackened the paint of the doors."

And in the following paragraph, where I say "I placed the charcoal to intercept the foul air," the printer has made the word "fresh."

I am, &c.,

JASPER W. ROGERS.

Peat-house, Robertstown, County Kildare,
5th August, 1861.

Proceedings of Institutions.

BROMLEY LITERARY INSTITUTE.—The Fifth Annual Report congratulates the members on the prosperous state of the Institute. The members during the year number 174. The library is gradually augmenting, and the crowded state of the shelves is already pressing upon the Committee the necessity of providing more space for books than the present rooms afford. The Committee think that it would be desirable to secure for the Society a site for a building, which should include a lecture-room capable of holding at least 500 persons. The Committee are encouraged in this view by the fact that other towns, with less advantages, perhaps, than those possessed by Bromley and its neighbourhood, have already accomplished the task of providing for themselves suitable Institute buildings. After full consideration, the Committee venture to hope that, on a convenient site being found, the funds required for the erection of a structure adequate to the wants of the Bromley Literary Institute (and adapted to be used occasionally, if required, for the administration of justice) might be locally raised, partly by voluntary contributions, and partly by means of a Joint-Stock Company with limited liability, in £10 shares, exchangeable at any time, at the option of the holder, into

life-member tickets. The proceeds of lectures delivered in a room of enlarged area, and the annual subscriptions accruing from a probable increase in the number of members, would materially assist in the arrangement. The vote of £10, granted in the early part of last year to the library fund, has been expended in the purchase of carefully-selected books, and a further sum of £10 has been recently appropriated to the same fund, to meet the increasing demand on the part of the members for general literature and popular works. Lectures upon various subjects and entertainments have been given by gentlemen, whose gratuitous services the Committee thankfully acknowledge. It has more than once occurred, particularly on occasions of Christmas entertainments, that a large number of members and others have been unable to gain admission, on account of want of space, in the largest assembly room that could be found in our town for the purpose. The following is a statement of the lectures and entertainments during the year 1860:—"Dramatic Selections," T. F. D. Croker, Esq.; "On the Arctic Regions," Rev. H. C. Adams; Entertainment, Mr. Basil Young; "George Stephenson," C. Wykeham Martin, Esq.; "On Memory," Dr. Edward Pick; "On Charles Lamb and his Essays," H. Deane, Esq., jun.; "On Robert Burns," A. Hamilton, Esq.; and a Christmas Entertainment, by Members. The financial statement shows that the receipts have been £151 8s. 3d., and that there is a balance in the hands of the Treasurer of £6 8s. 2d.

PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[From Gazette, August 2nd, 1861.]

Dated 19th March, 1861.

687. B. West, 2, St. James'-walk, Clerkenwell—Imp. in cutting and ornamenting the edges of books, paper, vellum, and other substances, and in apparatus connected therewith.

Dated 1st April, 1861.

800. R. Scarle, Woodford Wells, Essex—Imp. in the manufacture and insulation of telegraph cables and telegraphic wires in general, and of apparatus for laying marine telegraph cables.

Dated 10th April, 1861.

880. A. Lamb, Southampton—Imp. in condensers.

Dated 17th April, 1861.

944. B. Brown and R. Hackins, Bury, Lancashire—Certain imp. in machinery or apparatus employed in spinning cotton, wool, silk, and other fibrous substances.

946. H. A. F. Duckham, Clerkenwell-green—Imp. in gas meters and regulators, and in compounding materials to be used as a coating for or in the composition of substances subject to the action of gas.

Dated 12th June, 1861.

1505. H. Mason, Ashton-under-Lyne—Imp. in machinery or apparatus for preparing and spinning cotton or other fibrous materials.

Dated 13th June, 1861.

1516. E. Chatonet, jun., La Rochelle, France—An improved machine or apparatus for manufacturing the covers of tin or other metal cases.

Dated 21st June, 1861.

1602. W. Hobson and T. Cavill, Sheffield—An improved piston.

Dated 29th June, 1861.

1666. W. Clark, 53, Chancery-lane—Imp. in the distillation of solid and liquid combustible matters. (A com.)

Dated 3rd July, 1861.

1688. J. Simonton, Belfast—An improved traction engine and apparatus applicable for the cultivation of land.

Dated 4th July, 1861.

1702. W. E. Newton, 66, Chancery-lane—Imp. in engines for obtaining motive-power by the electric force of steam and air combined, part of which imps. may be employed for sounding steam whistles. (A com.)

Dated 9th July, 1861.

1735. A. Priest and W. Woolnough, jun., Kingston-on-Thames, Surrey—Imp. in machinery for drilling and hoeing land.

Dated 11th July, 1861.

1753. W. Wilkinson, Bayswater—Imp. in manufacturing and ornamenting brushes, parts of which are applicable to ornamenting baskets and articles of furniture and to protecting silver on glass.

1755. H. Ashwell, New Basford, Nottinghamshire—Imp. in apparatus for washing, cleansing, scouring, getting up, dyeing, boiling, and steaming.

Dated 12th July, 1861.

1756. T. J. Smith, Queen-street, Cheap-side—Imp. in photographic albums.

1759. S. Berchtold, 48, Frith-street, Soho—Imp. in perpetual calendars to be used either separately or in connection with watches or clocks.

Dated 13th July, 1861.

1763. I. Beamish, Liverpool, and N. Beamish, Egremont, Cheshire—Imp. in lubricating those parts of steam engines acted on by the steam, and in apparatus for the same, which said apparatus can be used for other purposes.

1767. T. Smith and G. Taylor, Ipswich—Imp. in horse rakes and cultivators, and in wheels for the same and other carriages.

Dated 15th July, 1861.

1768. T. Woycke, America-square, Minorities—An imp. in the manufacture, construction, and production of the heels and the uppers immediately above the heels of boots and shoes for imparting durability and permanency of form to the said heels and uppers.

1769. E. Briggs, Castleton Mills, near Rochdale, and S. Fearnley, Rochdale—Imp. in the manufacture of piled fabrics, and in the machinery or apparatus employed in manufacturing piled and other fabrics.

1770. T. Walker, jun., Otley, Yorkshire—Certain imp. in apparatus for polarising light applicable to microscopes and other optical instruments.

1771. G. Treble, jun., Aldersgate-street—An imp. in show cases.

1772. T. Cobley, Meerholz, Germany—Imp. in the manufacture of metallic and earthy silicates or siliceous compounds of the same from the metallic and earthy bases or their salts and soluble alkaline, silicates, the formation of alkaline acetates or caustic alkalies, and application of the same.

1777. B. Browne, 52, King William-street—Improved machinery for clearing and smoothing spun thread or yarns and other similar fibrous materials. (A com.)

1778. A. Topham, J. Topham, and J. Topham, St. Pierre les Calais, France—Imp. in the manufacture of lace.

1779. J. H. Johnson, 47, Lincoln's-inn-fields—Imp. in machinery or apparatus for cleaning rice. (A com.)

1781. W. Rigby, Glasgow—Imp. in the manufacture of armour plates for defensive purposes.

1782. J. Mabson, Newcastle-upon-Tyne—Imp. in sewing machines, particularly applicable to quilting and braiding.

1783. E. G. Fermier de la Provotais, 29, Boulevard St. Martin, Paris—Extracting the fibres from genista scoparia (broom) and their application to manufacturing paper and fabrics, and also treating the washing waters so as to obtain dyeing products therefrom.

1784. W. Clark, 53, Chancery-lane—Imp. in stage scenery and apparatus. (A com.)

Dated 16th July, 1861.

1785. J. Mapple, 2, Newman's-place, Kentish-town—Imp. in telegraphic apparatus.

1787. J. S. Wells, Mount-street, Nottingham—An improved needle used in the manufacture of looped fabrics.

1788. J. Blinkhorn, Chorley, Lancashire—Imp. in machinery or apparatus for working railway signals.

1789. R. Jones, Camden-town—Imp. in safety lamps.

1791. D. Holder, jun., Thornhill-road, Barnstury—Imp. in foot and kneeling stools.

1792. C. D. Abel, 20, Southampton-buildings, Chancery lane—Certain new alloys of silver with other metals, and the processes employed in their manufacture. (A com.)

1793. W. Palmer, Sutton-street, Clerkenwell—Imp. in lamps.

Dated 17th July, 1861.

1797. J. Parker, Ivy-house, Bradford, J. Wells and B. Wells, Bowling, near Bradford—Imp. in steam engines, boilers, furnaces, and apparatus applicable thereto.

1798. J. Mason, Birmingham—An imp. or imps. in metallic pens. (A com.)

1799. C. E. Redfern, 10, Saint Paul-street, New North-road, Islington—Imp. in the construction of locks, and adaptation thereof to various useful purposes.

1800. W. O. Brooke, Westminster—Imp. in apparatus for suspending and insulating electric telegraph wires.

1802. A. V. Newton, 66, Chancery-lane—An improved process and improved machinery for obtaining fibres from the stalks or leaves of fibre-yielding plants. (A com.)

1803. J. Trigwell, Terminus-street, Brighton—Imp. in slide valves.

Dated 18th July, 1861.

1804. S. Tawell, Aldermanbury—An imp. in or addition to the selvages of laces and other woven fabrics.

1805. A. Elliott, Manchester—Certain imp. in looms for weaving.

1806. M. E. Guymard, 29, Boulevard St. Martin, Paris—Imp. in the manufacture of shirt fronts, collars, and cuffs.

1809. J. Tillotson, Bolton—Certain imp. in the manufacture of pawnbroker's duplicate tickets, and in the apparatus connected therewith.

1810. P. Williams, Salford, and T. Parkinson, Bury—Certain imp. in carding engines for carding cotton and other fibrous substances.

1812. G. Coles, Gresham-street West, J. A. Jaques and J. A. Fanshawe, Tottenham—Improved apparatus to be used for brushing and dressing cloth.

1813. J. A. Jaques and J. A. Fanshawe, Tottenham—An improved apparatus for a mode of stopping, plugging, or closing ink-stands, bottles, and other vessels of capacity.

1814. J. W. Rogers, Peat-house, Roberts-town, Kildare, Ireland—An improved mode of building ships and floating batteries, applicable also in part to the construction of fortifications.

Dated 19th July, 1861.

1815. R. Walker, Eccleston, near Prescot—An improved apparatus for stopping and packing bottles.

1816. D. Gallafent, 15, Stepney-causway—Certain imp. in refrigerators for cooling liquids.

1818. P. Shaw, Boston, U.S.—Imp. in hot air engines.

1819. R. Laing and G. R. Cosins, Ince, near Wigan—An improved mode of obtaining nitrous acid gas for making sulphuric acid.

1820. R. C. Newbery, President-street West, Goswell-road—Imp. in the manufacture of enamelled cards.

1821. W. Savory and P. H. Savory, Gloucester—An improved winding apparatus particularly adapted for steam ploughing, winding at pits, quarries, and other such like purposes.

1822. M. Henry, 84, Fleet-street—Imp. in the production of paper pulp and in bleaching paper pulp and certain fabrics, also in apparatus for cutting wood applicable for carrying out part of the invention. (A com.)

1824. R. A. Brooman, 166, Fleet-street—Imp. in breech-loading ordnance, applicable also to small arms. (A com.)

1826. W. E. Newton, 68, Chancery-lane—Improved apparatus for copying letters or writings and draughts. (A com.)

Dated 20th July, 1861.

1827. E. T. Hughes, 23, Chancery-lane—Imp. in machinery or apparatus for manufacturing woven seamless gloves. (A com.)

1829. W. Price, Lambeth—Imp. in tools for cutting shives and other conical blocks.

1831. T. Roberts and J. Dale, Manchester—Imp. in the manufacture of gunpowder.

1833. J. Cole and J. Cole, Coventry—An imp. in the construction of watches, &c.

Dated 22nd July, 1861.

1835. M. A. F. Mennoens, 39, Rue de l'Ecliquier, Paris—Imp. in safety locks. (A com.)

1837. A. Watson, Johnstone, N.B.—Imp. in brake apparatus for common road vehicles.

1839. W. Hood, Reading—Imp. in beams and girders, and in applying the same in buildings.

1841. J. Beattie, Lawn-place, South Lambeth—Imp. in arrangements in buildings and ships with a view to the extinguishment of accidental fire therein, and also the ventilation thereof.

Dated 23rd July, 1861.

1843. G. F. Griffin, New Adelphi-chambers—Imp. in the permanent way of railways.

1847. J. H. Johnson, 47, Lincoln's-inn-fields—Imp. in forges. (A com.)

1849. W. Clark, 53, Chancery-lane—Imp. in apparatus for the condensation of steam in marine engines, and in the particular application of parts thereof to the ship. (A com.)

Dated 24th July, 1861.

1851. T. Hughes, Birmingham—An improved steam generator.

1855. H. Neville, Portsmouth—Improved apparatus for taking photographs.

PATENTS SEALED.

[From Gazette, August 2nd, 1861.]

August 2nd.

121. E. Stevens.
297. G. Williams.
304. A. Drevelle.
306. T. Gee.
308. C. W. Forbes.
311. J. Beesley.

315. T. Blezard and J. Blezard.
319. R. Harrild and H. Harrild.
326. C. J. Richardson.
332. J. Lockwood.
367. W. Clark.
408. W. Clark.
1394. H. Allman.

[From Gazette, August 6th, 1861.]

May 6th.

314. A. Drevelle.
327. H. Withers.

331. J. Higgins and T. S. Whitworth.
335. A. Leidemann & T. Lange.
389. J. Braham.

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

[From Gazette, August 2nd, 1861.]

July 29th.

1747. S. Hine.

1784. C. Mather.
1810. H. Clayton.

July 30th.

1728. N. S. Dodge.

1811. W. Smith.

1769. J. J. Russell.

1766. C. Callebaut.

[From Gazette, August 6th, 1861.]

August 1st.

1764. A. V. Newton.

1782. John Henderson.

1834. George Houghton.

1783. D. McCrummen.

August 2nd.

1762. J. H. Johnson.

1799. J. Smith.